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or, more probably, group of fine lines. Not the slightest trace of either dark or bright lines can be seen in the vicinity of D. The continuous spectrum close to the bright hydrogen lines appears somewhat darker than it does elsewhere, but this I have considered to be the effect of contrast.

U Cygni. This is a very red star, with a spectrum described by DUNÉR as III*b*. When examined with the 36-inch refractor it was of about the tenth magnitude, and the spectrum was dim, but the zones in the lower part could be distinguished. The blue was excessively faint. There was no appearance of bright lines.

V Cygni is also a very red star, and when examined with the spectroscope was of about the same brightness as *U Cygni.* Its spectrum is described by DUNÉR as III*b*! The sky was remarkably smoky when observations were made here, and the spectrum was dim, but at three places in the yellow and green shone with such comparative brightness that these places appeared like bright lines. The brightest was the more refrangible yellow line. It is possible that these lines may be the edges of the usual zones of class III*b*, as DUNÉR says the yellow and green zones are very bright, but the appearance was more like that of bright lines.

D. M. 43°, No. 3571. This is a star recently found by Prof. PICKERING, by the aid of photography (A. N. 2912), to belong to class II*b*. It is much like the other stars of this class found by Prof. PICKERING and by WOLF and RAYET. The faint spectrum connecting the principal bright lines in the spectra of these stars appears to be continuous with a small instrument, but with the 36-inch refractor is seen to be an extremely complicated range of absorption bands and faint bright lines. The above star differs from others that I have examined in the unusual broadness and diffuseness of these faint bands. J. E. K.

"AN IMPROVED ASTRONOMICAL MIRROR."

A device for constructing large telescope mirrors, which has recently been patented (at an expense of $60), is described under the above title in the *Scientific American* for September 7, 1889. The mirror is a flat, circular disc of metal, supported around its circumference by a flange or shoulder on the cell. Through a hole in its centre passes a bolt, and by turning a nut on the outside of the cell, the mirror is "buckled" into shape. The inventor has omitted to mention that by carrying the motion of the nut to a convenient position near the eye-piece a ready adjustment of the focus will be obtained. This method has the great advantages of simplicity and cheapness; its defects will be ascertained by the inventor when he comes to try it.

J. E. K.

OBSERVATIONS ON THE NEAR APPROACH OF MARS AND SATURN ON SEPTEMBER 19, 1889.

The eastern sky was thick with haze when the two planets rose, and they were not visible until a considerable altitude was attained. At about 4 A. M. they could be seen dimly with the naked eye; *Mars*, small and insignificant, slightly east of *Saturn*. As soon as the images were at all measurable, I made a series of micrometrical observations of the two for position angle and distance, and for differences of right ascension and declination, using the 12-inch equatorial.

Following are the measures which are corrected for refraction in distance and in the $\Delta\ \delta$ and $\Delta\ a$; the times being Mt. Hamilton mean time:

		d.	*h.*	*m.*	*s.*	
1889.	Sept.	19	16	16	39.	Position angle of *Mars*, 101°.0 (3).
"	"	19	16	24	24.	Dist. betw'n outer limbs of *Mars* and *Saturn*, 356″.1 (3).
"	"	19	16	29	14.	" " nearer " " " " 342″.3 (3).
	"	19	16	34	19.	" " center and center, 358″.8 (3).
"	"	19	16	39	49.	Position angle of *Mars*, 101°.8 (4).
"	"	19	17	36	29.*	$\Delta\ \delta$ ♂—♄ $-1'\ 39''.2$ (5) apparent.
"	"	19	17	45	49.*	$\Delta\ a$ ♂—♄ $-0^m\,29^s.91$ (11) apparent.

The most striking feature was when the two planets were fading from the advent of daylight. At the approach of day *Saturn* assumed a pale, ashy hue, with a slight tinge of yellow, while *Mars* retained its lustre in a surprising manner, being of a strong orange yellow in color; its north polar cap stood out strikingly towards the close of the observations, a dark marking being also visible near the middle of the disc. *Saturn* ceased to be visible in the telescope at 18h. 6m., the last glimpse being had a few seconds earlier. At this time *Mars* was easily conspicuous, the sun being 5° or 6° high and the sky pretty thick. At 18h. 10m. *Mars* began to grow pale. At 18h. 25m. it was still visible but very pale and easily lost in the field, though it could have been followed for some time longer. By the time the

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* These times are for the bisection of *Mars*.